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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/884,585	06/19/2001	John G. McDonough	TI-31693	2579
23494	7590	09/21/2004	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED			TORRES, JUAN A	
P O BOX 655474, M/S 3999			ART UNIT	
DALLAS, TX 75265			PAPER NUMBER	
			2631	

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/884,585

Applicant(s)

MCDONOUGH ET AL.

Examiner

Juan A Torres

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11, 14-21 and 23-25 is/are rejected.
- 7) ☒ Claim(s) 10, 12, 13 and 22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

The drawings are objected to because figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. Figure 5 should include the labels "MASK 2" "MASK 3" "MASK 4" mentioned in the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: in page 13 line 20 it is written "shot code" and should be "short code"; page 14 line 1 it is written

"registers 134 through 140", 134 through 140 are AND gates not registers (page 13 line 25).

Appropriate correction is required.

Claim Objections

Claim 4 objected to because of the following informalities: in page 25 line 24 it is written "a second interval", it should be "a second time interval"; and in page 25 line 23 at the end the word "and" is missing. Appropriate correction is required.

Claim 11 objected to because of the following informalities: in page 27 line 22 it is written "and" a second time consecutively, it should be deleted. Appropriate correction is required.

Claim 12 objected to because of the following informalities: in page 28 line 9 it is written "and" a second time consecutively, it should be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 recites the limitation " the number of masks used for storage " in page 28 line 21 and "the number of masks required for processing" in page 28 line 22. There is insufficient antecedent basis for this limitation in the claim.

Claim 14 recites the limitation "the DSSS receiver" in page 29 line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6 and 15-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Storm (US 6175561).

As per claim 1 Storm (US 6175561) in figure 2 discloses a method for shifting the phase of a pseudorandom noise (PN) code comprising accepting a PN code with a first phase (block 208 column 6 lines 29-34); determining a first time interval (column 6 line 56); selecting a phase-shifting mask in response to the first time interval (column 6 lines 58-60); shifting the PN code first phase with the phase-shifting mask (column 6 lines 54-55, column 7 lines 54-58); and generating a PN code with a second phase (block 205 column 5 line 33), offset by the first time interval from the PN code first phase (column 1 lines 41-43).

As per claim 2 Storm (US 6175561) in figure 2 discloses a method for determining a first time interval that includes accepting a first time interval from among a plurality of first time intervals (column 6 lines 58-59).

As per claim 3 Storm (US 6175561) in figure 2 discloses a method for selecting a phase-shifting mask in response to the first time interval including selecting a phase-shifting mask from a plurality of phase-shifting masks (column 6 lines 56-58).

As per claim 4 Storm (US 6175561) in figure 3 discloses a method further comprising generating the PN code at a first chip period (column 5 lines 23-25); and accepting a second time interval proportionally related to the first chip period (column 7 lines 59-60).

As per claim 5 Storm (US 6175561) in figure 3 discloses a method for accepting a plurality of second time intervals (column 6 lines 58-60).

As per claim 6 Storm (US 6175561) in figure 2 discloses a method for determining a first time interval from among a plurality of first time intervals that are offset from each other by predetermined periods of time (column 6 line 56); and selecting a phase-shifting mask from among a plurality of phase-shifting masks that are offset from each other by PN code phase shifts each one corresponding to one of said first time intervals (column 6 lines 56-58).

As per claim 15 Storm (US 6175561) in figure 2 discloses a direct sequence spread spectrum (DSSS) communications network (column 4 lines 2-10) with a receiver (block 114 column 5 line 19) comprising a memory (block 212 column 6 line 57) having a port to supply a phase-shifting mask (connection of blocks 212 and 210 column 6 line

53); an application means to determine a first time interval (column 6 line 56), the application means cross-referencing the first time interval to the phase-shifting mask (column 6 lines 58-60), the application means having an output connected to the memory port to request the phase-shifting mask (column 6 lines 53-56); and a pseudorandom noise (PN) code generator (block 205 column 5 line 33) having a first input connected to the memory to accept the phase-shifting mask (block 210 column 6 lines 53-56), the PN code generator offsetting a PN code with the phase-shifting mask (column 6 line 56), the PN code generator having an output to supply the PN code with a second phase (block 205 column 5 line 33), offset from the PN code first phase (column 1 lines 41-43).

As per claim 16 Storm (US 6175561) in figure 2 discloses a memory including a plurality of phase-shifting masks (column 6 lines 56-58); and application means cross-references a plurality of time intervals to the plurality of phase-shifting masks in memory (column 6 lines 53-56)

As per claim 17 Storm (US 6175561) in figure 2 discloses a PN code generator that generates the PN code at a first chip period (block 205 column 5 line 34); determines a first time interval proportionally related to the first chip period (column 6 line 56); and a memory supplies a phase-shifting mask that is offset by a PN code phase shift proportionally related to the first time interval (block 212 column 6 lines 56-58).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7-9, 11, 18-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Storm (US 6175561) as applied to claim 6 above, and further in view of Rueth (US 5228054).

As per claim 7 and 18 Storm (US 6175561) discloses claim 6 and 17. Storm (US 6175561) doesn't teach specifically that the PN code has $(2^N - 1)$ states with a period $m = (2^N - 1)$, though he discloses (column 1 lines 41-50) how in the case of the TIA/EIA IS-95 standard the sequence is of length 2^{15} and that the minimum time separations are 64 chips in length allowing a total of 512 different PN code phase assignments for the base stations ($2^N = 32768 = 64 * 512$). Rueth (US 5228054) discloses in column 5 lines 14-19 that the use of the N-bit mask can be set to provide any one of the $(2^N - 1)$ different shifts of the basic sequence. The mask input bus is set to a predetermined value so as to result in the desired phase shift of the second output. It would have been obvious to one having ordinary skill in the art at the time the invention was made when implementing the method described by Storm (US 6175561) in column 1 lines 39-50 to generate the PN code with a first chip period includes generating a PN code with $(2^N - 1)$ states, and a period m equal to $(2^N - 1)$ times the first chip period; determining a first time interval includes selecting a first time interval in the range between zero and m ,

with a resolution of x (in the case discloses by Storm for the IS-95 $x=64$); and generating a PN code with a second phase, offset a second time interval from the PN code first phase generating a PN code with a second phase that is offset with respect to time in units of x ($x=64$ for IS-95).

As per claims 8 and 19, Storm (US 6175561) and Rueth (US 5228054) disclose claim 7 and 18. Storm (US 6175561) in figure 3 discloses a method further comprising generating the PN code at a first chip period (column 5 lines 23-25);

As per claim 9, Storm (US 6175561) and Rueth (US 5228054) disclose claim 7. Storm (US 6175561) in figure 3 discloses a method further comprising generating the PN code at a first chip period (column 5 lines 23-25); and accepting a second time interval proportionally related to the first chip period (column 7 lines 59-60). In the case of the IS-95 presented by Storm $x=1$ $q=64$ for IS-95.

As per claim 11, Storm (US 6175561) and Rueth (US 5228054) disclose claim 7. Storm (US 6175561) in figure 3 discloses a direct sequence spread spectrum (DSSS) receiver (column 4 lines 2-10) with a memory is included (block 212 column 6 line 57), determining a first time interval in the range between x and nx (column 1 lines 39-50 column 6 line 57); storing n phase-shifting masks in memory, corresponding to the plurality of first time periods between x and nx (column 1 lines 39-50, block 212, column 6 lines 56-58); and selecting a phase-shifting mask from the n phase-shifting masks stored in memory (column 6 line 53).

As per claim 21, Storm (US 6175561) and Rueth (US 5228054) disclose claim 18. Storm (US 6175561) in figure 3 discloses a plurality of first time intervals in the

range between x and n_x (column 1 lines 39-50 column 6 line 57); and the memory includes n phase shift masks corresponding to the plurality of first time periods between x and n_x (column 1 lines 39-50, block 212 column 6 lines 56-58).

Claims 14, 20, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Storm (US 6175561) as applied to claim 6 above, in view of Rueth (US 5228054) and further in view of Easton (US 6590886).

As per claim 14, Storm (US 6175561) and Rueth (US 5228054) disclose claim 7. Storm (US 6175561) in figure 3 also discloses a DSSS receiver accepts transmissions spread using the first PN code, and in which the DSSS receiver includes a first chip rate clock (column 4 lines 2-10). Storm (US 6175561) and Rueth (US 5228054) fail to disclose that their method could be used to wake up a receiver that is slotted mode sleep interval with the appropriate PN phase shift. Easton (US 6590886) discloses in column 8 lines 45-56 that to avoid gross PN sequence misalignment, a change in PN masks corresponding to the change in alignment is needed. Easton discloses that instead of the a mask derived from the transmitter PN offset alone, the programmed mask value consists of a base PN offset derived from the transmitter PN offset combined with a component tracking the remainder of the programmed sleep intervals integrated across all previous slots modulo a PN sequence period. To save power in the slotted mode sleep interval of a DSSS system it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the phase shift method discloses by Strom.

As per claim 20, Storm (US 6175561) and Rueth (US 5228054) disclose claim 18. Storm (US 6175561) in figure 3 discloses a method further comprising generating the PN code at a first chip period (column 5 lines 23-25); and accepting a second time interval proportionally related to the first chip period (column 7 lines 59-60). In the case of the IS-95 presented by Storm $x=1$ $q=64$ for IS-95. Easton (US 6590886) discloses a sleep clock (block 203) having an output connected to the application means (block 204) and wherein the application means plurality of time intervals have a resolution of x equal to the sleep clock period (column 8 lines 45-56). It would have been obvious to one having ordinary skill in the art at the time the invention was made to save power in the slotted mode sleep interval of a DSSS system discloses by Easton to use the phase shift method disclosed by Storm.

As per claim 23, Storm (US 6175561) and Rueth (US 5228054) disclose claim 18. Storm (US 6175561) in figure 3 also discloses a searcher section (block 114), having an input connected to PN code generator output to accept the PN code with the second phase shift, the searcher section resynchronizing the accepted transmissions with the generated PN code (column 5 lines 40-47). Storm and Rueth don't disclose the predetermined time interval to be the time during the clock is power-down. Easton (US 6590886) discloses in column 1 lines 60-64 that during the save power state the clock is shutted off, and in column 8 lines 45-56 that to avoid gross PN sequence misalignment, a change in PN masks corresponding to the change in alignment is needed. Easton discloses that instead of the a mask derived from the transmitter PN offset alone, the programmed mask value consists of a base PN offset derived from the transmitter PN

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offset combined with a component tracking the remainder of the programmed sleep intervals integrated across all previous slots modulo a PN sequence period. To save power in the slotted mode sleep interval of a DSSS system it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the phase shift method disclosed by Storm with a predetermined period of time of the time during the clock is shut-off during the sleep period.

As per claim 24, Storm (US 6175561) Rueth (US 5228054) and Easton (US 6590886) disclose claim 23. Easton (US 6590886) discloses an application means that accepts a second time interval corresponding to a slotted sleep mode interval (figure 2 column 6 line 1), with the application means programs the PN code generator to be powered off for the second time interval (Column 1 lines 60-64); and the application means determines the first time interval in response the actual time that the PN code generator was powered-off (figure 2 column 8 lines 54-55). It would have been obvious to one having ordinary skill in the art at the time the invention was made, to save power in the slotted mode sleep interval of a DSSS system discloses by Easton to use the phase shift method disclosed by Storm.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Storm (US 6175561), and further in view of Easton (US 6590886). Storm (US 6175561) discloses a direct sequence spread spectrum (DSSS) communications network where transmissions are spread with a PN code (column 4 lines 2-10), a method for conserving power in a slotted mode of operation (column 3 lines 6-17), the method comprising: storing a plurality of phase-shifting masks (column 6 lines 56-58);

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generating a synchronized pseudorandom noise (PN) code to despread transmissions (block 205 column 5 lines 34-39); accepting a slotted mode sleep second time interval from a plurality of second time intervals (column 7 lines 59-60); beginning the sleep mode at a first phase of the PN code; ending the sleep interval; determining the first time interval between the beginning and the end of the sleep interval (column 6 line 56); selecting a phase-shifting mask from storage in response to the first time interval (column 6 line 53); offsetting the PN code first phase with the phase-shifting mask (column 6 line 54); generating the PN code with a second phase (column 6 lines 55-56); and resynchronizing the generated PN code to despread transmissions (column 7 lines 35-38). Storm (US 6175561) does not disclose specifically that the time interval corresponds to the difference beginning and the end of the sleep time interval. Easton (US 6590886) discloses the beginning the sleep mode at a first phase of the PN code (figure 2 column 5 line 5 to column 6 line 14); ending the sleep interval (column 6 line 4); determining the first time interval between the beginning and the end of the sleep interval (column 8 line 54).). It would have been obvious to one having ordinary skill in the art at the time the invention was made, to save power in the slotted mode sleep interval of a DSSS system discloses by Easton to use the phase shift method disclosed by Storm.

Allowable Subject Matter

Claims 10, 12 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 13 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan A Torres whose telephone number is (571) 222-3119. The examiner can normally be reached on M-TH 9:00 AM- 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H Ghayour can be reached on (571) 222-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JAT

JAT

9-11-2004


MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER